

POSITION PAPER

15/December/2009

EGEC's Position on 'CARBON CAPTURE AND STORAGE'

Before the EU Member States implement the directive on the geological storage of carbon dioxide (CCS) and the directive on the promotion of the use of energy from renewable Sources,

EGEC, representing the geothermal industry, and relying on its members' expertise in geology and hydrogeology, belonging to organisations involved in geothermal but also CCS technologies, presents here its position addressing the synergies and conflicting issues in both technologies.

- Having regard to the RES Directive, defining geothermal energy as a renewable *"energy stored in the form of heat beneath the surface of solid earth"*
- Having regard to the CCS directive (recital 19 and article 4), *"Member States should retain the right to determine the areas within their territory from which storage sites may be selected. This includes the right of Member States not to allow any storage in parts or on the whole of their territory, or to give priority to any other use of the underground, such as exploration, production and storage of hydrocarbons or geothermal use of aquifers. In this context, Member States should in particular give due consideration to other energy-related options for the use of a potential storage site, including options which are strategic for the security of the Member State's energy supply or for the development of renewable sources of energy"*.

EGEC considers:

- CCS is a solution to mitigate climate change at short and medium term, towards a carbon free European energy
- It could be applied in particular if no alternatives exist, like for energy-intensive industry (steel, cement, glass...),
- CCS should use privilege off-shore storage sites wherever feasible,
- CO₂, like natural gas, is a sensitive fluid which needs to be stored in safe conditions with an impermeable cap to avoid migration.

A research collaboration should start immediately between both the Geothermal and CCS communities¹ on common areas of interest in order to decrease the costs and resolve environmental issues:

¹ plus oil & gas sector on some topics

- drilling stimulation and reservoir assessment, 3D & 4D modelling, deep geological mapping (1-5 Km),
- Creation of a Fund for covering the drilling risk,
- monitoring of micro-seismicity
- a research program should be launched on permanent fixation of CO₂ in the form of calcite in basaltic rocks
- a research program should be initiated on the safe use of CO₂ as a heat carrier fluid in geothermal systems such as EGS

Therefore EGEC suggests:

- the CCS projects financed by the European Economy Recovery Plan (ca. €1.050 billion) and the NER300 must share with the public their results on exploration and storage
- the CCS exploration licence must be granted for a defined area and for a specified period of time. The area and the duration of the license should be appropriate for the size and type of the project as done in the oil and gas industry
- the potential of deep geothermal in Europe must be evaluated (with a special emphasis on Enhanced Geothermal Systems (EGS))

EGEC urges public authorities to produce an underground regional planning in order to optimise resource allocation between geothermal energy, carbon storage and possible other underground usages, and therefore maximize the benefits for society.

There is obviously conflicting potential as a result of the competition between CO₂ disposal and geothermal energy projects because they may target the same deep aquifers, or the same areas within sedimentary basins. Geothermal energy may also be produced from rocks below the depth range for potential CO₂ disposal sites, and investigations are needed to determine if geothermal exploitation beneath CO₂ deposits might be feasible at all.

Carbon capture and storage is essentially a bridging technology whereas geothermal energy is a sustainable energy resource.

Zones of dual use capability should be clearly identified and priority should be given to their use for geothermal energy over their use as a carbon storage site.

EGEC foresees an important development of geothermal energy in the future and especially after 2030 when Enhanced Geothermal Systems will be a widely-used technology.

The increase of a renewable energy source, a long term solution, must not be hampered by a technology, CCS, that has the potential only to serve as a temporary, interim GHG mitigation measure.

European Geothermal Energy Council - EGEC
 Renewable Energy House
 63-67 rue d'Arlon - B - 1040 Brussels
 T : +322 400 10 24 & F : +322 400 10 39
 E : com@egec.org & W : www.egec.org

Appendices:

Map on CCS Potential

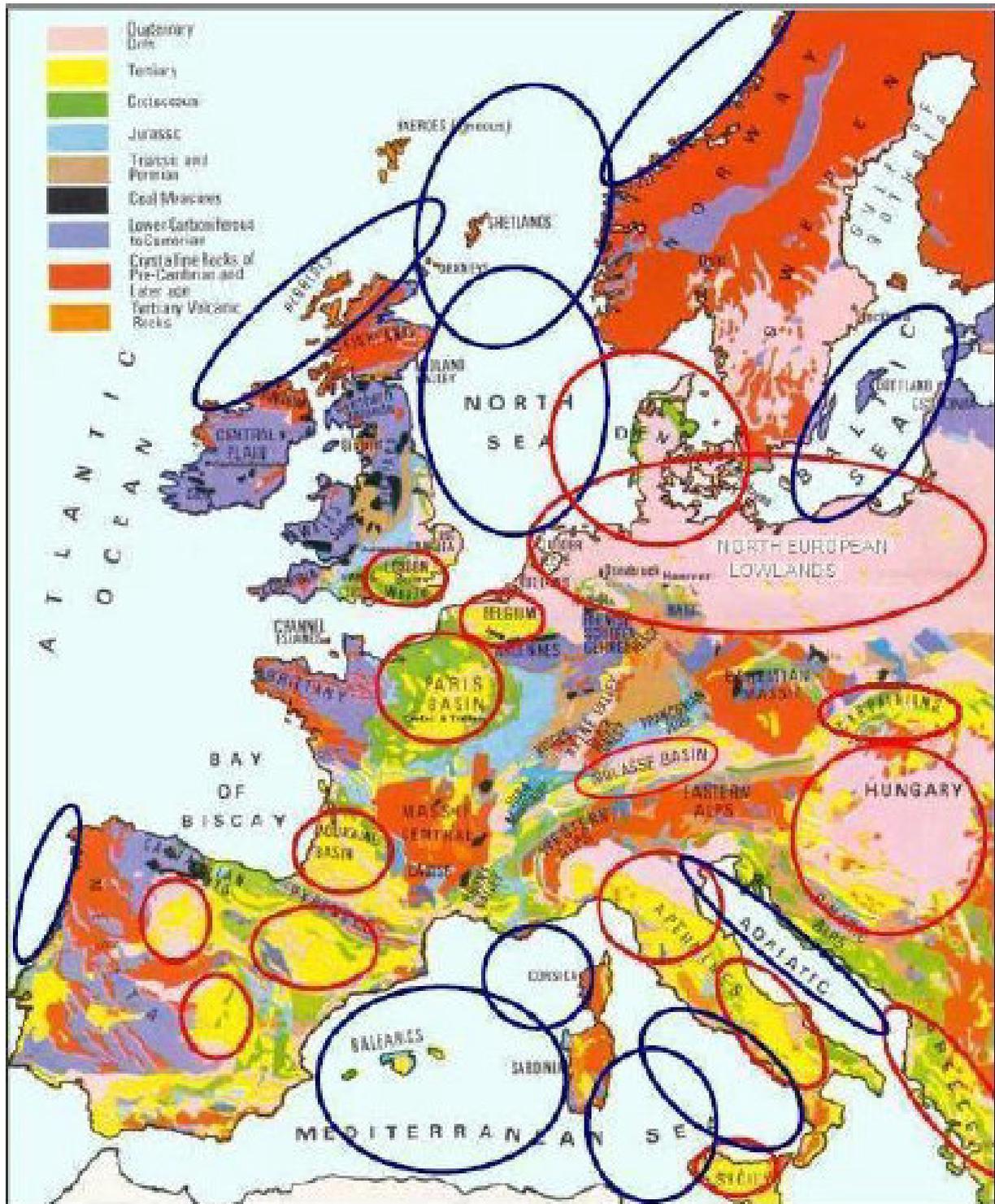
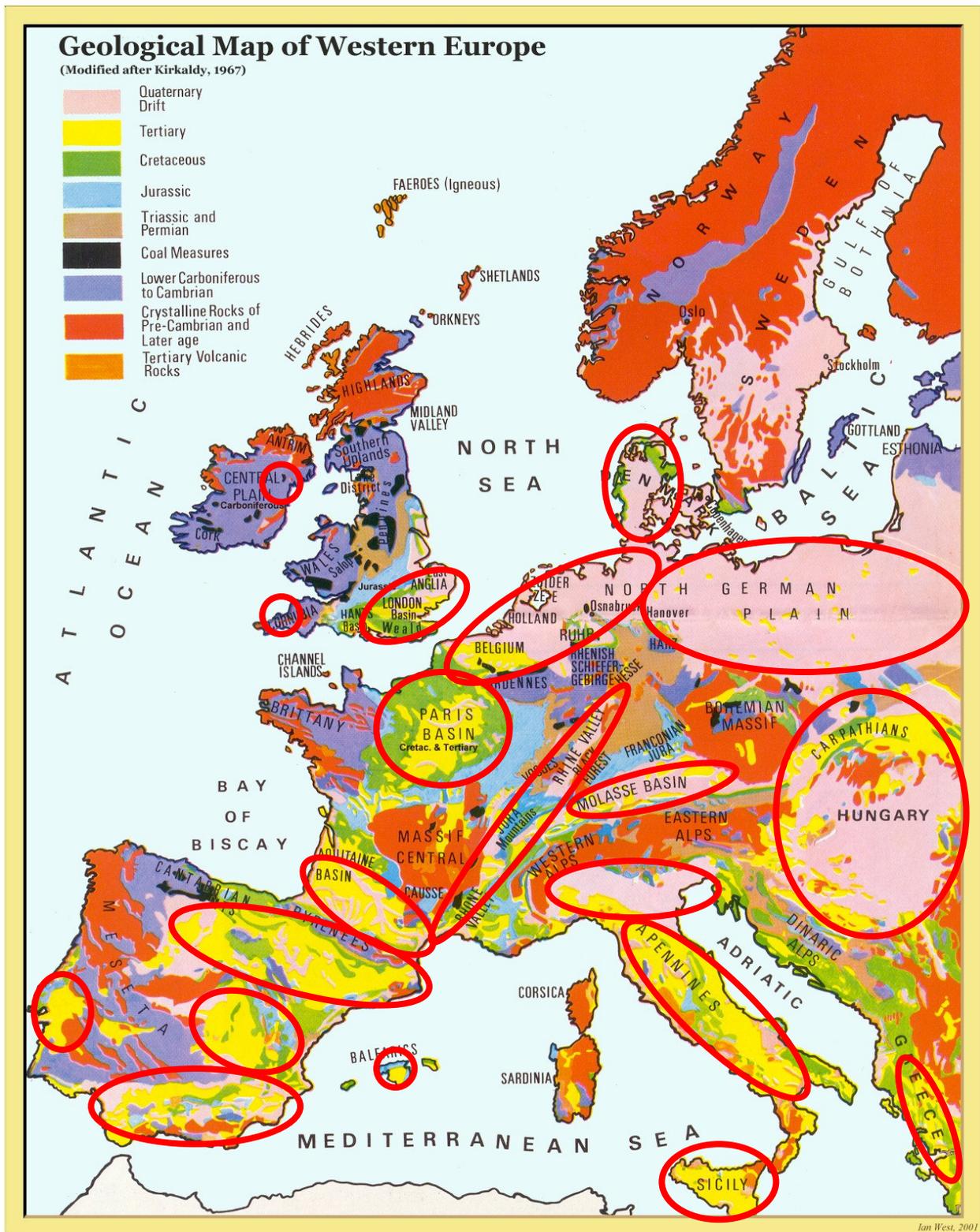


Fig 1 shows major on – and offshore sedimentary basins in Europe which are possible storage site. Cost analysis must be performed to identify the most cost-effective (modified after Kirkaldy, 1967)

From The European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP) - **Strategic Deployment Document**

Map on European geothermal potential (Hydrothermal and EGS)



This map shows geological basins in Europe which are possible for cost-effective geothermal electricity projects ; future developments might allow other regions to be used too. There is also current potential in Romania, Bulgaria and Greece, which are not covered on the map (base map Kirkaldy, 1967).